

CLAIMS

What is claimed is:

1. A method of position determination for a mobile station, the method comprising:
determining a first measurement for position determination for the mobile station
from position determination signals received at the mobile station; and
determining a first reliability indicator from the signals for the first measurement,
the first reliability indicator representing a level of measurement false
alarm probability for the first measurement.
2. The method of claim 1, further comprising:
determining a reliability level from the first reliability indicator to represent a
probability that a position for the mobile station calculated using the
measurement is not false.
3. The method of claim 2, wherein the position is calculated at the mobile
station.
4. The method of claim 1, further comprising:
transmitting the first measurement and the first reliability indicator to a remote
server for position determination of the mobile station.

5. The method of claim 1, further comprising:
transmitting one or more signal quality indicators from the mobile station to a
remote server, the one or more signal quality indicators being determined
from the signals for the first measurement;
wherein the first reliability indicator is determined at the remote server using the
one or more signal quality indicators.
6. The method of claim 1, further comprising:
determining a second measurement from position determination signals received
at the mobile station; and
determining a second reliability indicator from position determination signals for
the second measurement, the second reliability indicator representing a
level of measurement false alarm probability for the second measurement.
7. The method of claim 6, further comprising:
calculating a position solution for the mobile station using the first and second
measurements; and
combining the first and second reliability indicators to determine a reliability of
the position solution.
8. The method of claim 6, further comprising:
eliminating one of the first and second measurements from position determination
using the first and second reliability indicators.

9. The method of claim 1, wherein the first reliability indicator is determined from at least one of:
- a) magnitude of a correlation peak;
 - b) correlation peak width;
 - c) signal strength;
 - d) signal to noise ratio;
 - e) signal to interference ratio;
 - f) relationship of a correlation peak used for determination of the first measurement with one or more candidate peaks; and
 - g) relationship of signals for determination of the first measurement with detected signals.
10. The method of claim 1, wherein the first measurement comprises one of:
- a) a time of arrival of a signal; and
 - b) a pseudorange.
11. A method of position determination for a mobile station, the method comprising:
- combining a plurality of measurement false alarm indicators to determine a reliability of a position calculated using a plurality of measurements, the plurality of measurement false alarm indicators representing levels of *a priori* false alarm probability for the plurality of measurements respectively.
12. The method of claim 11, further comprising:
- calculating the position for the mobile station using the plurality of measurements.

13. The method of claim 11, wherein each of the plurality of measurement false alarm indicators is a value of more than two levels.
14. The method of claim 13, wherein each of the plurality of measurement false alarm indicators is a number within a range.
15. The method of claim 11, further comprising:
determining one of the plurality of measurement false alarm indicators from one
or more signal quality indicators;
wherein the one or more signal quality indicators comprises one of:
 - a) magnitude of a correlation peak;
 - b) correlation peak shape indicator;
 - c) signal strength;
 - d) signal to noise ratio; and
 - e) signal to interference ratio.
16. A method of position determination for a mobile station, the method comprising:
eliminating one of a plurality of measurements from position determination using
a plurality of *a priori* false alarm indicators in response to a determination
that the plurality of measurements are not consistent, the plurality of *a*
priori false alarm indicators being determined respectively for the
plurality of measurements individually.
17. The method of claim 16, wherein the one of the plurality of measurements
is determined from comparing the plurality of *a priori* false alarm
indicators.

18. The method of claim 16, further comprising:
determining a plurality of inconsistency indicators for the plurality of
measurements respectively from the plurality of measurements;
wherein the one of the plurality of measurements is determined from weighting
the plurality of inconsistency indicators according to the plurality of *a priori* false alarm indicators respectively.
19. The method of claim 16, further comprising:
determining whether or not an inconsistency level among the plurality of
measurements is above a threshold.
20. The method of claim 16, wherein the plurality of *a priori* false alarm
indicators are determined from signals used for determination of the
plurality of measurements respectively.
21. A machine readable medium containing executable computer program
instructions which when executed by a data processing system cause the
system to perform a method of position determination for a mobile station,
the method comprising:
determining a first measurement for position determination for the mobile station
from position determination signals received at the mobile station; and
determining a first reliability indicator from the signals for the first measurement,
the first reliability indicator representing a level of measurement false
alarm probability for the first measurement.
22. The medium of claim 21, wherein the method further comprises:
determining a reliability level from the first reliability indicator to represent a
probability that a position for the mobile station calculated using the
measurement is not false.

23. The medium of claim 22, wherein the position is calculated at the mobile station.
24. The medium of claim 21, wherein the method further comprises:
transmitting the first measurement and the first reliability indicator to a remote server for position determination of the mobile station.
25. The medium of claim 21, wherein the method further comprises:
transmitting one or more signal quality indicators from the mobile station to a remote server, the one or more signal quality indicators being determined from the signals for the first measurement;
wherein the first reliability indicator is determined at the remote server using the one or more signal quality indicators.
26. The medium of claim 21, wherein the method further comprises:
determining a second measurement from position determination signals received at the mobile station; and
determining a second reliability indicator from position determination signals for the second measurement, the second reliability indicator representing a level of measurement false alarm probability for the second measurement.
27. The medium of claim 26, wherein the method further comprises:
calculating a position solution for the mobile station using the first and second measurements; and
combining the first and second reliability indicators to determine a reliability of the position solution.

28. The medium of claim 26, wherein the method further comprises:
eliminating one of the first and second measurements from position determination
using the first and second reliability indicators.
29. The medium of claim 21, wherein the first reliability indicator is
determined from at least one of:
- a) magnitude of a correlation peak;
 - b) correlation peak width;
 - c) signal strength;
 - d) signal to noise ratio;
 - e) signal to interference ratio;
 - f) relationship of a correlation peak used for determination of the first
measurement with one or more candidate peaks; and
 - g) relationship of signals for determination of the first measurement with detected
signals.
30. The medium of claim 21, wherein the first measurement comprises one of:
- a) a time of arrival of a signal; and
 - b) a pseudorange.
31. A machine readable medium containing executable computer program
instructions which when executed by a data processing system cause the system to
perform a method of position determination for a mobile station, the method
comprising:
combining a plurality of measurement false alarm indicators to determine a
reliability of a position calculated using a plurality of measurements, the

plurality of measurement false alarm indicators representing levels of *a priori* false alarm probability for the plurality of measurements respectively.

32. The medium of claim 31, wherein the method further comprises:
calculating the position for the mobile station using the plurality of measurements.
33. The medium of claim 31, wherein each of the plurality of measurement false alarm indicators is a value of more than two levels.
34. The medium of claim 33, wherein each of the plurality of measurement false alarm indicators is a number within a range.
35. The medium of claim 31, wherein the method further comprises:
determining one of the plurality of measurement false alarm indicators from one or more signal quality indicators;
wherein the one or more signal quality indicators comprises one of:
 - a) magnitude of a correlation peak;
 - b) correlation peak shape indicator;
 - c) signal strength;
 - d) signal to noise ratio; and
 - e) signal to interference ratio.
36. A machine readable medium containing executable computer program instructions which when executed by a data processing system cause the system to

perform a method of position determination for a mobile station, the method comprising:

eliminating one of a plurality of measurements from position determination using a plurality of *a priori* false alarm indicators in response to a determination that the plurality of measurements are not consistent, the plurality of *a priori* false alarm indicators being determined respectively for the plurality of measurements individually.

37. The medium of claim 36, wherein the one of the plurality of measurements is determined from comparing the plurality of *a priori* false alarm indicators.
38. The medium of claim 36, wherein the method further comprises:
determining a plurality of inconsistency indicators for the plurality of measurements respectively from the plurality of measurements;
wherein the one of the plurality of measurements is determined from weighting the plurality of inconsistency indicators according to the plurality of *a priori* false alarm indicators respectively.
39. The medium of claim 36, wherein the method further comprises:
determining whether or not an inconsistency level among the plurality of measurements is above a threshold.
40. The medium of claim 36, wherein the plurality of *a priori* false alarm indicators are determined from signals used for determination of the plurality of measurements respectively.

41. A data processing system for position determination for a mobile station, the data processing system comprising:
means for determining a first measurement for position determination for the mobile station from position determination signals received at the mobile station; and
means for determining a first reliability indicator from the signals for the first measurement, the first reliability indicator representing a level of measurement false alarm probability for the first measurement.
42. The data processing system of claim 41, further comprising:
means for determining a reliability level from the first reliability indicator to represent a probability that a position for the mobile station calculated using the measurement is not false.
43. The data processing system of claim 42, wherein the position is calculated at the mobile station.
44. The data processing system of claim 41, further comprising:
means for transmitting the first measurement and the first reliability indicator to a remote server for position determination of the mobile station.
45. The data processing system of claim 41, further comprising:
means for transmitting one or more signal quality indicators from the mobile station to a remote server, the one or more signal quality indicators being determined from the signals for the first measurement;

wherein the first reliability indicator is determined at the remote server using the one or more signal quality indicators.

46. The data processing system of claim 41, further comprising:
means for determining a second measurement from position determination signals received at the mobile station; and
means for determining a second reliability indicator from position determination signals for the second measurement, the second reliability indicator representing a level of measurement false alarm probability for the second measurement.
47. The data processing system of claim 46, further comprising:
means for calculating a position solution for the mobile station using the first and second measurements; and
means for combining the first and second reliability indicators to determine a reliability of the position solution.
48. The data processing system of claim 46, further comprising:
means for eliminating one of the first and second measurements from position determination using the first and second reliability indicators.
49. The data processing system of claim 41, wherein the first reliability indicator is determined from at least one of:
a) magnitude of a correlation peak;
b) correlation peak width;
c) signal strength;

- d) signal to noise ratio;
 - e) signal to interference ratio;
 - f) relationship of a correlation peak used for determination of the first measurement with one or more candidate peaks; and
 - g) relationship of signals for determination of the first measurement with detected signals.
50. The data processing system of claim 41, wherein the first measurement comprises one of:
- a) a time of arrival of a signal; and
 - b) a pseudorange.
51. A data processing system for position determination for a mobile station, the data processing system comprising:
- means for combining a plurality of measurement false alarm indicators to determine a reliability of a position calculated using a plurality of measurements, the plurality of measurement false alarm indicators representing levels of *a priori* false alarm probability for the plurality of measurements respectively.
52. The data processing system of claim 51, further comprising:
- means for calculating the position for the mobile station using the plurality of measurements.
53. The data processing system of claim 51, wherein each of the plurality of measurement false alarm indicators is a value of more than two levels.

54. The data processing system of claim 53, wherein each of the plurality of measurement false alarm indicators is a number within a range.
55. The data processing system of claim 51, further comprising:
means for determining one of the plurality of measurement false alarm indicators
from one or more signal quality indicators;
wherein the one or more signal quality indicators comprises one of:
a) magnitude of a correlation peak;
b) correlation peak shape indicator;
c) signal strength;
d) signal to noise ratio; and
e) signal to interference ratio.
56. A data processing system for position determination for a mobile station, the data processing system comprising:
means for eliminating one of a plurality of measurements from position
determination using a plurality of *a priori* false alarm indicators in
response to a determination that the plurality of measurements are not
consistent, the plurality of *a priori* false alarm indicators being determined
respectively for the plurality of measurements individually.
57. The data processing system of claim 56, wherein the one of the plurality of measurements is determined from comparing the plurality of *a priori* false alarm indicators.

58. The data processing system of claim 56, further comprising:
means for determining a plurality of inconsistency indicators for the plurality of
measurements respectively from the plurality of measurements;
wherein the one of the plurality of measurements is determined from weighting
the plurality of inconsistency indicators according to the plurality of *a priori* false alarm indicators respectively.
59. The data processing system of claim 56, further comprising:
means for determining whether or not an inconsistency level among the plurality
of measurements is above a threshold.
60. The data processing system of claim 56, wherein the plurality of *a priori* false
alarm indicators are determined from signals used for determination of the
plurality of measurements respectively.
61. A mobile station of a position determination system, the mobile station
comprising:
a signal receiving circuit to receive position determination signals;
a processor coupled to the signal receiving circuit, the process determining a first
measurement for position determination for the mobile station from the
signals, the processor determining a first reliability indicator from the
signals for the first measurement, the first reliability indicator representing
a level of measurement false alarm probability for the first measurement.

62. The mobile station of claim 61, wherein the processor further determines a reliability level from the first reliability indicator to represent a probability that a position for the mobile station calculated using the measurement is not false.
63. The mobile station of claim 61, further comprising:
a communication section coupled to the processor, the communication section transmitting the first measurement and the first reliability indicator to a remote server for position determination of the mobile station.
64. The mobile station of claim 61, wherein the processor further determines a second measurement and a second reliability indicator for the second measurement from position determination signals received by the signal receiving circuit; wherein the second reliability indicator represents a level of measurement false alarm probability for the second measurement.
65. The mobile station of claim 64, wherein the processor further calculates a position solution for the mobile station using the first and second measurements and combines the first and second reliability indicators to determine a reliability of the position solution.
66. The mobile station of claim 64, wherein the processor further eliminates one of the first and second measurements from position determination using the first and second reliability indicators.

67. The mobile station of claim 61, wherein the first reliability indicator is determined from at least one of:
- a) magnitude of a correlation peak;
 - b) correlation peak width;
 - c) signal strength;
 - d) signal to noise ratio;
 - e) signal to interference ratio;
 - f) relationship of a correlation peak used for determination of the first measurement with one or more candidate peaks; and
 - g) relationship of signals for determination of the first measurement with detected signals.
68. The mobile station of claim 61, wherein the first measurement comprises one of:
- a) a time of arrival of a signal; and
 - b) a pseudorange.
69. A data processing system for position determination for a mobile station, the data processing system comprising:
- a memory to store a plurality of measurement false alarm indicators and a plurality of measurements, the plurality of measurement false alarm indicators representing levels of *a priori* false alarm probability for the plurality of measurements respectively; and
 - a processor coupled to the memory, the processor combining the plurality of measurement false alarm indicators to determine a reliability of a position calculated using the plurality of measurements.

70. The data processing system of claim 69, wherein the processor further calculates the position for the mobile station using the plurality of measurements.
71. The data processing system of claim 69, wherein each of the plurality of measurement false alarm indicators is a value of more than two levels.
72. The data processing system of claim 71, wherein each of the plurality of measurement false alarm indicators is a number within a range.
73. The data processing system of claim 69, wherein the processor further determines one of the plurality of measurement false alarm indicators from one or more signal quality indicators; wherein the one or more signal quality indicators comprises one of:
- a) magnitude of a correlation peak;
 - b) correlation peak shape indicator;
 - c) signal strength;
 - d) signal to noise ratio; and
 - e) signal to interference ratio.
74. A data processing system for position determination for a mobile station, the data processing system comprising:
- a memory to store a plurality of measurements and a plurality of *a priori* false alarm indicators, the plurality of *a priori* false alarm indicators being determined respectively for the plurality of measurements individually

a processor coupled to the memory, the processor eliminating one of the plurality of measurements from position determination using the plurality of *a priori* false alarm indicators in response to a determination that the plurality of measurements are not consistent.

75. The data processing system of claim 74, wherein the one of the plurality of measurements is determined from comparing the plurality of *a priori* false alarm indicators.
76. The data processing system of claim 74, wherein the processor further determines a plurality of inconsistency indicators for the plurality of measurements respectively from the plurality of measurements; wherein the one of the plurality of measurements is determined from weighting the plurality of inconsistency indicators according to the plurality of *a priori* false alarm indicators respectively.
77. The data processing system of claim 74, wherein the processor further determines whether or not an inconsistency level among the plurality of measurements is above a threshold.
78. The data processing system of claim 74, wherein the plurality of *a priori* false alarm indicators are determined from signals used for determination of the plurality of measurements respectively.